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SUMMARIES OF ARTICLES.

[ABBREVIATIONS. — *Am. J. Ps.* = *American Journal of Psychology*; *Ar. f. G. Ph.* = *Archiv für Geschichte der Philosophie*; *Int. J. E.* = *International Journal of Ethics*; *Phil. Mon.* = *Philosophische Monatshefte*; *Phil. Stud.* = *Philosophische Studien*; *Rev. Ph.* = *Revue Philosophique*; *R. I. d. Fil.* = *Rivista Italiana di Filosofia*; *V. f. w. Ph.* = *Vierteljahrschrift für wissenschaftliche Philosophie*; *Z. f. Ph.* = *Zeitschrift für Philosophie und philosophische Kritik*; *Z. f. Ps. u. Phys. d. Sinn.* = *Zeitschrift für Psychologie und Physiologie der Sinnesorgane*; *Phil. Jahr.* = *Philosophisches Jahrbuch*; *Rev. de Mét.* = *Revue de Métaphysique et Morale*. — Other titles are self-explanatory.]

PSYCHOLOGICAL.

Beiträge zur Kenntniss der Farbenblindheit. II. A. KIRSCHMANN. Phil. Stud., VIII, pp. 402–429.

The author's conclusions may be summarized as follows: (1) No one has ever seen light of *one* wave-length. (2) No conclusion may be drawn from the mixture of the colors of a dispersion-spectrum as regards an exceptional position of certain wave-lengths. (3) Purple is a component of white light, on the same level as any other color-quality. (4) Not only are spectral colors not perfectly pure: they are not equally pure in the same spectrum. [Criticism of the color-triangle construction.] (5) Definition of normal and color-blind vision. (6) Vision is achromatic, dichromatic, or polychromatic. [Criticism of Helmholtz.] (7) For polychromates no universally valid distinction of ground-sensations or primary valences can be made. (8) Not all polychromates are normal. (9) There are various modes of transition from normal polychromatism to pure dichromatism: not every case of anomalous polychromatism presents such a transition-mode. (10) Dichromatism does not display any constant preference in the matter of its two ground-colors. (11) There may be wanting the sensibility to *any* particular spectral quality, in dichromatism and polychromatism: there may be a transference of complementarism. (12) The 'neutral line' of color-blindness does not always by any means lie where it should, according to the ground-color theories. [Illustrations from ten cases.]

E. B. T.

Beiträge zur Psychologie des Zeitsinnes. II. E. MEUMANN. Phil. Stud., IX, pp. 264–306.

Psychological conditions of the comparison of time-intervals. (1) For intervals up to half a second the limiting stimuli are dominant in consciousness; for longer intervals, the time between them. (2) The temporal content is in the first case the succession of sensations, in the second the duration of the processes which run their course between the sensation-pairs. (3) The apprehension of least intervals is usually rhythmical. (4) And rhythm is, in part at least, an æsthetic factor. (5) The difference between perception-time and memory-time only exists for the longer intervals. (6) There occur constant differences in the attentional adaptation, for different lengths of intervals. § 1. *Dependence of temporal estimation on the intensity and the change of intensity of the limiting sensations.* Apparatus. Experiments. Results. (1) The influence of intensity is not due (to any great extent) to alteration of the limiting sensational-duration, nor to association, nor to general phenomena of the attention. Rather must the question of rhythmic time-apprehension be examined for itself. (2) There exists, under certain conditions, an elementary relationship of the rhythmical impression: the same rhythmical expression may arise from the most diverse causes, when likeness and difference of the impressions remain analogous. This helps to explain the dependence of temporal estimation or change of intensity and quality. Perhaps subjective accentuation is the attentional fact, which mediates between the two.

E. B. T.

Rhythm. THADDEUS L. BOLTON. Am. J. Ps., VI, 2, pp. 146–217.

The object of this investigation, carried on in the laboratory of Clark University, was first, to determine "what the mind does with a series of simple auditory impressions in which there is absolutely no change of intensity, pitch, quality, or time-interval"; and second, to find what effect upon the rhythmical grouping is brought about by regular variations with respect to time-interval or intensity of the sounds in the series. The sounds used were telephone clicks produced in an induction circuit by breaks in a constant primary circuit. These clicks form a more uniform series than was obtained in the experiments of Dietze or of Angell and Pierce. The chief results of the work may be stated in the author's words: "In a series of auditory impressions any regularly recurrent impression which is different from the rest subordinates the other impressions to it in such a way that they fall together in groups. If the recurrent difference is one of intensity, the strongest impression comes first in the group. . . . If the recurrent difference is one of duration, the longest impression comes last. . . . When the impressions are uniform in length and intensity, the mind enforces a grouping by giving fictitious values to the impressions, generally with respect to intensity, but sometimes with respect to duration. At the rate .795 sec. the mind intensifies every other sound, so that the series is grouped by 2. . . . The second sound in the group is subordinated to the first. At the rate .460 sec. the mind finds it easy to group a series of auditory impressions by three, by intensifying the first greatly and the second slightly. . . . More than three degrees of intensity do not appear together in the order of their intensities in a series. In grouping by four, which takes place generally at the rate .307 sec., the mind accents the first strongly and the second slightly." Muscular movements accompanying the series are regarded by the writer as the condition, not the result, of the rhythmical grouping. A general principle of rhythm is stated as follows : "The conception of a rhythm demands a perfectly regular sequence of impressions within the limits of about 1.0 sec. and 0.1 sec. A member of the sequence may contain one or more simple impressions. If there are a number of impressions, they may stand in any order of arrangement, or even in a state of confusion [?], but each member of the sequence must be exactly the same in the arrangement of its elements."

MARGARET WASHBURN.

Einige Versuche mit der Wunderscheibe. P. GRÜTZNER. Pflüger's Arch., LV, 9 and 10, pp. 508–520.

The various forms of the stroboscope ; two types of construction. (1) A projection arrangement, similar to that devised by Uchatius. (2) Color-mixture, with an apparatus resembling Purkinje's *Phorolyt.* (3) Contrast-effects with the stroboscope. (4) Apperceptive completion of defective stroboscopic presentations.

E. B. T.

La connaissance de phénomènes nouveaux. B. BOURDON. Rev. Phil., XVIII, 12, pp. 629–631.

Lalande's explanation of paramnesia is on a level with explanation by metempsychosis. Experiments show 'recognition,' (1) with partial resemblance; and (2) in the case of entirely 'new' presentations. Recognition consists in a sort of feeling (*sentiment*); it is found where the attention is forced by interest, or where the act of apperception is rapid and forcible.

E. B. T.

Les laboratoires de psychologie expérimentale en Allemagne. V. HENRI. Rev. Phil., XVIII, 12, pp. 608–622.

Contains a long description of Wundt's Institute, and an account of researches at present in progress (pp. 608–618): followed by briefer notices of the Göttingen (pp. 618–621), Bonn (pp. 621, 622), and Berlin (p. 622) laboratories.

E. B. T.

On the Discrimination of Groups of Rapid Clicks. T. J. BOLTON. Am. J. Ps., V, 3, pp. 294–311.

As the result of some 2,500 observations, it was found that a difference of one click in a group of ten could be noticed when the clicks were given at the rate of 133 per second, and a difference of one in nine when the rate was 153 per second. No clicks dropped out of consciousness in groups of eight or nine given at the rate of 153 per second. Increase in the number of clicks in a group did not diminish the discreteness of the clicks.

W. B. PILLSBURY.

Statistics of Dreams. M. W. CALKINS. Am. J. Ps., V, 3, pp. 311–343.

This article is based on the records of 375 dreams of two observers, covering a period of seven or eight weeks. The course of dreams was largely determined by association, though often altered by the intrusion of new perceptions. The dreams reproduced the objects and events of perception and vivid imagination of the waking life. The objects of the will, emotions, and thought, were not reproduced unless also objects of perception. Many illusions occurred in dreams, some of which were recognized as such while dreaming. Several instances of seeming prevision were noticed, but none that could not be explained from their connection with the waking life.

W. B. P.

On the Pressure Sense of the Drum of the Ear and Facial Vision. F. B. DRESSLER. Am. J. Ps., V, 3, pp. 344–351.

Numerous observations proved that the drum of the ear was not sufficiently sensitive to changes in the pressure of the air to sense changes caused by the approach of an object. Observers blindfolded could distinguish changes in the character of a screen placed before the face. When the face was covered and the ears left open, this ability was not diminished. When the ears were stopped and the face exposed, this ability was entirely lost. Introspection on the part of the observers indicates that the judgments were based upon changes in the character of sounds from beyond the screen.

W. B. P.

On the Reaction Time when the Stimulus is applied to the Reacting Hand. J. F. REIGART and E. C. SANFORD. Am. J. Ps., V, 3, pp. 351–355.

Exner was led to believe that the reaction time was 10σ longer when the stimulus was applied to the reacting hand than when applied to the other. Some 500 experiments made in the psychological laboratory at Clark University show that the reaction time is practically the same, whether the stimulus is applied to one hand or the other.

W. B. P.

Experiments upon Physiological Memory by Means of the Interference of Associations. J. A. BERGSTRÖM. Am. J. Ps., V, 3, pp. 356–369.

The experiments consisted in sorting a pack of different kinds of cards, as indicated by a word or a picture, into piles of the different kinds. After the cards had once been sorted with the piles in a certain order, a longer time was required to sort them with a different arrangement of the piles. This interference from the previously formed associations decreased rapidly during the first eight seconds, afterwards more slowly, vanishing entirely in less than twenty-four hours.

W. B. P.

A New Instrument for Weber's Law; with Indications of a Law of Sense Memory. J. H. LEUBA. Am. J. Ps., V, 3, pp. 370–384.

The method consists in a classification of artificial stars into groups separated from each other by equal magnitudes. The changes in the magnitudes of the stars were made by means of an episkotister increasing in darkening value from circumference to centre. The results show a fairly close agreement with the requirements of Weber's Law. A tendency was noticed to displace the stimulus in memory toward the mean value of all the stimuli given. It is suggested that this may serve as a basis for a new law of sense memory.

W. B. P.

ETHICAL.

The Relation of Ethics to Jurisprudence. J. G. HIBBEN. Int. J. E., IV, 2, pp. 133–160.

As defined by Holland, the antithesis between Ethics and Jurisprudence is that between an ideal recognized by the individual, and a standard imposed by sovereign power. While the two standards are often distinct, there are cases where they are identical. To emphasize the spheres of law and ethics as separate, does not necessarily imply that there is no connection between them. Ethical forces may modify the original data of the problem of law. The sovereign power is not a force operating in a closed sphere. For the analytical jurists, sovereignty is an ultimate fact, but this cannot satisfy the political philosopher. Although all attempts to fortify sovereignty by social contract theories have failed, these attempts indicate the felt need of some basis for it. Sovereignty is not always the creator of law. The material of law is custom. Some customs have, indeed, no ethical significance, but others have, and through these law has at its source important ethical relations. The ethical worth a custom may have possessed is conserved when the custom becomes law. Sovereignty can never alter the nature of that which is essentially right or wrong. The analytical school admits the ethical relations of law in the science of legislation. In Equity, law as it ought to be is contrasted with law as it is. The existence of equity indicates claims of justice outside of, or opposed to, existent law, while the fact of equity decisions being incorporated in statute law indicates a transfer of ethical principles into the body of positive law. Decisions without precedent are based directly upon right and justice — an appeal to universal ethical law. Ethics checks legislation as a source of law. Law reform is due to a conflict between the positive law and a feeling of right, which feeling is an ethical force. International law is founded on principles whose sanction is purely ethical. The appeal must be to generally recognized principles of equity and justice.

T. W. TAYLOR, JR.

La logique sociale du sentiment. G. Tarde. Rev. Ph., XVIII, 12, pp. 561–594.

The political economist does not take account of the feelings of the heart, but these, nevertheless, play a most important rôle in human life. The heart of society is like a piano which from time to time gets out of tune, and requires the religious or social reformer to set it right again. The ideal of Benthamism, to increase the sum of pleasures and to diminish that of pains, neglects the qualitative differences of pleasures and pains, which are quite capable of outweighing quantitative differences. The true end of conduct is to increase the sum of kindly feelings and to diminish that of malicious feelings. Now even in the barbarian and savage epochs, where the social group consisted merely of a clan or a horde, the mutual relations of the members of the group were as cordial and fraternal as their relations to strangers were cruel and ferocious. As the social unit became larger and larger, the corresponding social system of feelings became at once extended, complicated, and consolidated. The goal of human development seems to be a maximum of love and a minimum of hatred. This general view is explained at length by the author and illustrated with constant references to well-known historical facts.

E. A.

METAPHYSICAL AND EPISTEMOLOGICAL.

Zur Frage über die Freiheit des Willens (Erster Artikel). N. Swereff. V. f. w. Ph., XVII, 4, pp. 476–489.

The chief difficulty arises from the improper formulation of the question. Habitually, the Free Will is described as exempt from the law of Causality, and so inner Freedom is defined through opposition to Necessity. It is not made clear what this opposition is. If Necessity, understood in the sense of conformity to Law, is Unfreedom, Freedom must be anarchy. But nothing real corresponds to this condition. It is clear no one ever so understood the Freedom of the Will. Its warmest defenders would disclaim such freedom. The error lies in the opposition of Freedom and Necessity. They are incommensurable. The concept of Freedom arises on the ground of inner experience and serves as definition for psychical condition. The concept of Necessity is a means of measuring the temporal relations of external phenomena. Both concepts characterize different sides of phenomena, and so cannot contradict, much less negate, one another. Habitually, authors (*e.g.*, Schopenhauer) have pointed out the error in their opposition, but have themselves relapsed into similar errors. Schopenhauer makes Freedom consist in *Being*, not in *Activity*. What is properly an act, is made a quality of an unchangeable essence.

Another formulation is the 'liberum arbitrium indifferentiae.' This does not differ from the first formulation. It means the indifferent or unmotived *choice* of actions, which is a 'contradictio in adjecto.' Free Will is further defined as 'self-determination.' But how does this happen? If in consequence of a motive the Will is subject to the principle of causality. If not, the Will is anarchistic. Free Will is sometimes described as an inner creative act. But what precedes this secret act? Either it has an inner ground, and so is conditioned; or it is absolutely accidental, and all attempt at explanation is given up. The source of error lies in the modern formulation of the causal principle or ground as "force which is the source of phenomena." This Force is not the final solution of the question. Does the force act without occasion? We shall try to show that the concept of Freedom, kept within natural limits, contains nothing irrational.

J. A. LEIGHTON.

Zur Kritik der historischen Methode. E. WACHLER. V. f. w. Ph., XVII, 4, pp. 490–499.

History is generally regarded as a science dealing with objective facts which it sets in their causal connection. But objective information is impossible. For the historian's material consists chiefly of subjective views of the events he deals with. Again, every exponent of a past supplies motives for the actions he describes. Consequently, the material can be construed only ideally. Again, personalities are dealt with in history. Their valuations are given, and these valuations are always subjective. In fact, each one tests an entire historical period from his own ethical or other standpoint, and this, again, depends on his place and education. Our postulates are not objectively valid, and we never restate anything without falsifying it. If science be the complete statement of a causal process, then history is hardly a science.

J. A. LEIGHTON.

L'ancienne et les nouvelles géométries. — I. *L'espace réel est-il l'espace euclidien?* J. DELBŒUF. Rev. Phil., XVIII, 11, pp. 449–484.

The article is intended to show that *real space* (A) has nothing in common with *Euclidean space* (B) but the name. Their differences are as follows: (1) B is homogeneous, *i.e.*, admits of similar figures differing only in size. A is heterogeneous; the nature of figures in it depends on their absolute magnitudes, as well as on their proportions. In real space and time things differ according as they occupy different positions in them, and homogeneous space is abstracted from the heterogeneous real space. (2) B is everywhere identical with itself: A is not, — for every figure is changed as soon as it changes its place. (3) B is invariable; A is continually changing. (4) A exists, and is coherent; B does not exist, and is contradictory. If, *e. g.*, there are two spheres, the one indefinitely large and the other indefinitely small, the latter may be contained in the former an indefinite number of times; and yet, in virtue of their similarity, a part of the smaller must correspond to each part of the larger. Hence also B does not admit of atoms, nor of sound and color theories based on wave-lengths, for the character of the sound and color depends on the absolute length of vibration. In short, if infinite divisibility were real, no science would be possible. (5) A is conceived of as unbounded; B always as finite, as finite and limited as one pleases. For its homogeneity involves its infinite divisibility, and serves every purpose of an infinity of extent. (6) A is continuous, while in B gaps and holes may be made. (7) B is penetrable, and admits of innumerable figures in the same place; A is impenetrable, once it is occupied. B, then, is an imaginary space, and exists only as universal conceptions do, in the human spirit. It is simple, because it is the result of a simplification; it is only as a theoretical abstraction, *e. g.*, that a ray of light travels in a straight line, — its actual course depends on the medium through which it passes. — To clench his argument, and to show the impossibility of identifying the space we live in with the Euclidean space, in which relative proportions are all-important and absolute magnitudes do not matter, Professor Delbœuf, referring to his lecture on "Megamicros," supposes all the geometrical dimensions of our planet to have been reduced by one half, and points out, very ingeniously, how this would affect the physical characteristics of life. The conclusion of the whole is, that "homogeneity remains the exclusive and characteristic property of geometrical space, even though it be incompatible with reality, even though it does not even admit of being conceived as realized."

F. C. S. S.

La répétition et le temps. LOUIS WEBER. Rev. Ph., XVIII, 9, pp. 263-286.

The concept of repetition unites the two antithetical concepts of permanence and change. Hence, one may direct one's attention to the identical elements in the consecutive phenomena, or, on the contrary, attend to differences and modifications. The identity of phenomena is only an hypothetical concept. One may postulate the identity of two phenomena, and admit that the same phenomenon may occur twice; this we shall call 'integral repetition.' So far as stress is laid upon the diversity of phenomena, which cannot be absolute, but rather implies a certain unity, one may form an antinomical concept, suppose a combination of identical and non-identical elements, and thus form the notion of a phenomenon repeated with alteration, *i.e.*, with progressive modification of the phenomenon in the course of repetition. We shall designate this concept and the principle involved as the concept and the principle of 'altering repetition.' The object of the present paper is to show the relations which unite the concepts of repetition, defined as above, with the concept of time, and to make it appear that, whichever point of view one adopts, one is led to conceive of time under one of two essentially different aspects. (1) 'Integral repetition.' The science of the 'phenomenon-in-itself,' *i.e.*, of external nature, depends for the most part on this principle: phenomena admit of repetition without alteration. While necessarily an assumption to start with, this principle finds itself justified by the steady growth of the physical sciences. As regards the concept of time which corresponds, it is evident that a phenomenon capable of integral repetition bears to duration only the relation of content to that which contains. Time is inert with regard to it, is a void and homogeneous medium. That which distinguishes time as medium from space is only the fact that it has but a single dimension. This concept of time is no more an illusion than the concept of integral repetition. They are both necessary conditions of the possibility of the science of 'phenomena-in-themselves.' (2) 'Altering repetition.' We have hitherto spoken of a single mode of existence, of objective existence, or existence-in-itself. But there are phenomena which exist not only in themselves, but also, and especially, for themselves, *viz.*, phenomena of consciousness. It remains to show that the concept of repetition which belongs to this class of phenomena is necessarily the concept of 'altering repetition.' Internal experience proves this, for consciousness itself would be impossible without change. On the other hand, internal experience, being experience, implies permanence as well. Identity united throughout with diversity, permanence always accompanied by change, these are the conditions of reflective consciousness; hence the subject cannot consider the repetition of its states under any other aspect than that of change. Indeed, it exists for itself only by reason of this perpetual transformation. This expresses the principle of 'altering repetition.' What does the concept of time become from this point of view? There can no longer be any question of a homogeneous, unilinear medium. The answer is to be found by the analysis of the conditions of the fact of consciousness, deduced from experience in general. The phenomenon for itself cannot be repeated without changing and finally disappearing. It follows that time, the order of succession of these phenomena, acts upon them immediately, *i.e.*, time in relation to them is an active and not a homogeneous medium. Psychology, the science of 'ejects,' accommodates itself neither to integral repetition nor to geometrical time. It requires 'altering repetition' and psychological time. This second mode of conceiving time marks a progress of intelligence toward the concrete. It does not, like the first, shock our intimate sense of duration, which is one of the immediate data of consciousness.

E. A.

Automatism and Spontaneity. EDMUND MONTGOMERY. Monist, IV, 1, pp. 44–65.

Since Descartes, the problem of philosophy has been to harmonize our power of influencing events in the external world with the otherwise necessitated course of nature. It must be admitted that our percepts arise from some power inherent in ourselves. The entire world-realization is contained in our own conscious content, the activity of our hidden nature. The correct analysis of our conscious content would yield a true and complete knowledge of nature. This conscious content cannot arise within the body, as the Idealists suppose, for the body arises as an insignificant part of the conscious content. The conscious content arises fluently and in fragments as the activity of a hidden matrix. This inner being has power to awaken in our beholders a group of percepts constituting our body, and at the same time is the bearer of its own conscious content. It far transcends the nature both of what we call our body and our mind. This being itself is neither mental nor physical; both mind and body are merely its functional activity. It is more permanent and essential than either. All knowledge of motion, both in ourselves and in nature, is symbolical. It is not strange, then, that we can know no more of activity than that it does not follow purely mechanical rules. In vain has science labored to reduce activity to merely mechanical laws. The specific indwelling power, possessed by every substance, of reacting to external forces, has baffled every attempt at a purely mechanical explanation of nature. The more elaborate the form of matter, the more complex its specific mode of reaction to external impulse. A purely mechanical explanation would leave no place for thoughts, emotions, and volitions, except as a useless by-play of non-sentient activity. We may say, then, that the activity of living beings is an activity of their non-mental natures. The accompanying molecular motion is of a kind far transcending mere mechanical motion. The inter-dependence or concomitance of conscious states with activity, either volitional or automatic, results from their being manifestations of the same hidden nature. The conscious state is one form of the activity of the most essential nature; the bodily activity is another manifestation of the same essential nature. In the spontaneous activity of his own hidden being consists man's freedom.

W. B. PILLSBURY.

L'abus de l'inconnaissable, et la réaction contre la science. A. FOUILLÉE. Rev. Phil., XVIII, 10, pp. 337–365.

There are three attitudes possible towards the concept of an Unknowable. First, one may refuse to assert either existence or non-existence of it. Second, one may deny both the reality and the possibility of the Unknowable. Third, one may maintain it to be both possible and real. The first, or purely critical, attitude recognizes the fact that knowledge has an objective and a subjective limit: an objective limit, inasmuch as we have no assurance that reality is wholly intelligible either for us or for any consciousness; a subjective limit, since a part of our conscious content, namely, feelings and volitions, cannot be conceived as referring to anything external to, or more ultimate than, itself, and hence cannot be explained. The critical thesis may therefore be summed up in two statements: first, the absolutely or objectively unknowable is for us nothing, nothing but a problem without an answer; second, the relatively unknowable of consciousness and will is subjectively given to us as a constituent of our reality.

Those who deny dogmatically the possibility of an unknowable do so on the ground that it is absurd to assume a knowledge of the possibility of that which cannot be known. But there is no real contradiction here, for to conceive a limit to knowledge is not to overstep that limit.

Thirdly, there are philosophers who not only posit an unknowable, but attempt to determine its relation to the known. Kant furnishes the best example of this abuse of the conception, when he calls the noumena causes of our perceptions, intelligible entities, etc. On the other hand, he opens the way for a skepticism destructive to science by his dogmatic denial that relations hold good of noumena, and that space and time, and consequently change, belong to things-in-themselves. Kant forgets that in our changing states of consciousness we have an example of real change; for however representative our perceptions may be with reference to external things, as conscious states they are precisely what they seem, and their relations are real.

From the Kantian doctrine that relation and thought are identical, Hegel passed to the statement that reality and thought are identical. Against this "absolute objectivism" M. Fouillée argues, first, that it is by no means certain that all reality is intelligible, and second, that not all relations are forms of thought proper; the most fundamental ones are sensitive and volitional. Absolute separation and absolute identification of thought and reality are alike undemonstrable. The only defensible attitude towards the unknowable is purely negative. We may posit a noumenal world existing independently of all relations, but in so far as we claim to know it, it does not exist. "The great metaphysical x at the outskirts of the objective universe being once assumed, let us beware of changing our hypothesis into a thesis, and of setting out from the unknown to cast suspicion on the validity of the known."

MARGARET WASHBURN.

Heredity versus Evolution. THEODORE GILMAN. Monist, IV, 1, pp. 80-98.

A survey of 'the theory of the non-transmission of acquired character, of the germ-plasm and the continuity of life, of natural selection and the rival theories of evolution and special creation,' and a few conclusions drawn therefrom. Evolution is a theory of descent, heredity the science of descent. Weismann's theory of non-transmissibility is stated in contrast to the opposite theory of all the Neo-Lamarckians. A quality, to be transmitted, must be inherent in the type. The *onus probandi* rests with Spencer *et al.*, and, as yet, they have not scientifically shown transmission to be a fact. The germ-plasm theory is threefold. There is the "id," composed of myriads of determinants, each of which is made up of a group of biophors, but forms a higher vital unit. The variety, possible for the determinant to give the biophors, is subject to environment only by inherent blastogenetic character. Reversion may thus be explained. The germ-plasm continuity theory confirms that of non-transmission. How, then, do species originate? If these two theories be accepted, natural selection and special creation coalesce; and evolution describes the process, not the power, of the origin. Another outcome of Weismann's theories is to take away the necessity of an indefinitely lengthened world chronology.

M. S. Read.

Dr. Weismann on Heredity and Progress. C. Lloyd Morgan. Monist, IV, 1, pp. 20–31.

The theory of biophors and determinants does not carry us much beyond our notion of potentiality. It is a mere suggestion to say that the transmitted potentiality is due to transmitted biophors and determinants, and the statement fails practically to give a detailed explanation of the mysteries of organic development. Dr. Weismann attributes effective variation to "the constant recurrence of slight inequalities of nutrition in the germ-plasm," but he has not pretended to say *how* changes of nutrition produce the particular variations in the determinants of the germ-plasm. The salient features of Weismann's views are these. (1) The development of the individual from a fertilized ovum is essentially germinal. This is an unsound proposition. (2) Heredity is provided for by the constant holding in reserve of some of the germinal matter which increases by growth and cell division. This proposition, if taken broadly as a statement of the view that certain cells remain comparatively undifferentiated and retain the potentiality of reproduction, may be accepted. (3) Effective variation is provided for by the influence of "nutrition" upon the determinants contained in this reserve germ-plasm. This proposition seems to throw too much stress on the nutrition and environment, too little on the inherent activities of living matter.

R. Watanabe.